surface of said shaped porous part, at the point where the fluid flows through, is porous and the other surface areas are provided with a fluid-impermeable closing means, which are interrupted by at least one duct connection opening.

Lastly, in two embodiments the invention is directed to a method of deep drawing and to a method of engraving the surface of a plastic part, using a device as above. In which a surface structure from a mastermold is transferred to the device and thereof to a plastic work-piece, e.g., a plastic film, wherein the plastic film is positioned over the porous surface of the porous shaped part and air is sucked out of the cavity formed between the plastic film and the porous part by means of a suction device.

Due to the micro-topography on their surface, their finely-porous structure and their excellent fluid permeability the porous shaped article according to the invention can find utility in various technical fields:

In plastics technology mold tools with or without micro-structured surfaces can be manufactured as for instance twin sheet molds, deep-draw press molds, deep-draw molds, injection molds or embossing rolls for engraving of plastic films and foils.

In impression technology female molds for stones and castings, polymer concrete stones, sand casting molds, tiles tableware and further molded articles can be made. Said molds allow the evacuation of the entire shape-giving surface, therefore a slurry of clay or gypsum can be drained rapidly after filling into the mold.

In the manufacture of cardboard or paper the shaped articles according to the invention can be used for the deckering of pulps, for the production of press molds for cardboard/ paper articles, packaging parts, support materials and containers.

In wet molding and laminating technology the shaped porous articles can be used to manufacture press molds for fiberglass or carbonfiber reinforced plastics, cellulose and textiles as well.

In die casting technology the porous shaped articles can be used as molds for high-viscous molding compounds, e.g., molded articles of silicone, seals for air

conditioning, components for air conditioning, air inlets and vents, components for weak flows.

In the field of air-conditioning technology cooling modules for the dissipation of heat, e.g., of elements with high structural density can be manufactured.

Silos, containers, tanks, silo discharging auxiliary such as flow trays or ventilation domes fully or partially made of those porous materials according to the invention facilitate control of the temperature and humidity of bulk/granular materials. Additionally conveying, discharging and fluidizing of bulk materials or disintegration of the materials to be mixed on the bottom of a container is easily possible.

In chemical engineering and processing powders can be easily compressed, degassed or deaerated. Furthermore fluids and solids can be separated or purified by using the porous shaped articles according to the invention.

In mechanical applications air bearings made from the porous materials allow the transport of goods on an air film.

In clamping technology sensitive materials can be kept/adhered by suction.

The molds according to the invention may be used for forming thermoplastic objects such as films and foils, preferably plastic films and foils by deep-drawing and engraving and impressing techniques. These articles may be utilized, for instance, as dashboards, interior parts for cars, industrial products, furniture and the like. Particularly, the invention relates to transferring microstructures of surfaces, such as hair-like or leather-like structures to plastic films and foils. Herein below the present invention will be described in more detail with reference to the following examples which should not be construed to limit the scope of the present invention.

Examples

Example 1

Properties of the molding material

Binder Polymer	epoxy-Resin, curing Agent
Matrix particles	Copper (10µm)
Matrix particles /Binder Polymer ratio	100:8.3 parts by weight

After 15 to 30 min of thoroughly mixing of the listed compounds using a barrel mixer a homogeneous composition was obtained. A mold has been made using the above mentioned composition.

Properties of the mold

Colour	copper-colored	
Density [g/cm^3]	4.79	DIN 16945
Flexural strength [N/mm^2]	23.7	ISO 178
Flexural modulus [N/mm^2]	6960	ISO 178
Tensile strength [N/mm^2]	10.6	ISO 527
Compressive strength [N/mm^2]	54	ISO 604
Heat distortion temperature [°C]	189	ISO R 75 Be
Shore hardness [D]	83	DIN 53505
Electrical resistance [Ω/cm]	0.5	
Air permeability [Nm^3/h]	1.78	1)
Reduced pressure [bar]	- 0.75	

1) The air permeability was measured by a compressed air consumption measuring device according to DIN 1952 or DIN 53887.
All measurements have been performed under standardized conditions (room temperature, atmospheric pressure).